

Hobbies

WEEKLY

CONTENTS

	Page
Single Seater Canoe	161
Perspex Tooth-brush Holder	163
Umbrella Stand	164
Policeman Windvane	165
Replies of Interest	166
Marking Tennis Balls	166
Gram-Radio Unit	167
Crumb Tray and Scoop	168
Garden Lounge Chair	169
Shed Repairs	170
Wind-breaks in Camp	171
Cotton Reel Lamp	172
Windvane Patterns	175

SUPPLEMENT DESIGN
SHEET FOR A
LETTER HOLDER

June 14th, 1950

Price Fourpence

Vol. 110 No. 2850

A simply made flat-bottomed SINGLE SEATER CANOE

THIS light little craft is quite easily built by any handy fellow, being designed for ease of construction and economy of materials. It is of the flat-bottomed type, and requires no building board to assist in the making. What is needed are a pair of boxes or, perhaps, trestles (if the latter happen to be available), to support the work during construction.

Bottom First

Make up the bottom of the canoe first. For this a number of $\frac{1}{2}$ in. thick boards will be required, sufficient to make a width of nearly 3ft. and a length of about 9ft. 6ins. If tongued and grooved boards can be got, all the better, otherwise square edged boards must suffice.

Avoid any boards with large knots or shakes. These boards should be laid side by side and the edges luted with a thick lead paint to seal them against the entry of water. The best plan will be to use white lead, ground in oil, with enough boiled linseed oil to make a paint of the consistency of thick cream. To this add a little patent driers.

Lute the edges of the boards close up tightly and keep together with a narrow batten at each end. Run a pencil line down the centre, and on this draw pencil lines across, as in plan view, Fig. 1, to guide the laying of the frame. At each end a stem post will be erected, as at (A). These are 1ft. 6in. lengths of 3in. square wood, planed to a triangular section, with a flat on the narrow end of $\frac{1}{2}$ in.

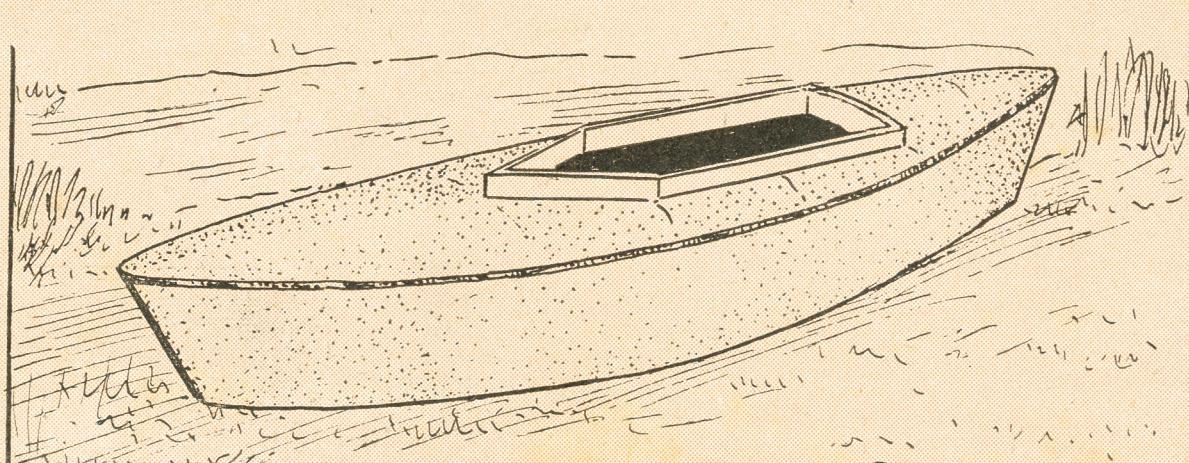
Trim the bottom ends of these to an

angle of 30 degrees, and screw to each end of the bottom, exactly central. When trimming the bottom ends, be sure to saw through quite square with the side faces, as the posts must be truly vertical to better ensure a symmetrical craft.

Frames

Six frames will be needed, and as these are numbered on the plan view and correspondingly numbered in Fig. 2, identification should be easy. Frames 3 and 4 are shown complete, the remainder only half size to economise space. They are made of $\frac{1}{2}$ in. wood, well screwed together. The top pieces are 6ins. wide, side ones 3ins. and bottom ones 2ins.

Frames 3 and 4 have their upper part sawn to the curved shape given in the



diagram, the others are not shaped until later on. In the centre of each frame make a pencil mark as a guide to fixing them exactly on the pencil lines drawn across the bottom, and truly central.

Fix these frames on their respective positions with screws, driven in from underneath the bottom. Throughout construction use only brass screws, and where nailing is concerned, copper nails only. Iron nails and screws will rust and be useless. If you have fixed frames and

battens will extend below the bottom at the centres, but this will not matter in the least, as the surplus can be planed off level afterwards.

If the boards used for making the canoe bottom are square edged, not tongued and grooved, the joints should be covered with 1in. wide strips of thin wood, well luted with the paint and nailed over between the frames, as in detail (B). Use plenty of paint so that a surplus squeezes out when the strips are

wood battens of 1in. by 2in. wood, long enough to stretch between frames 2 and 5. Lay them across these frames, with a distance of 1ft. 9ins. between them, and where they cross frames 3 and 4, pencil mark on the frames. Saw the frames on these marks, then nail the battens to frames 2 and 5, and screw them to the side remaining pieces of frames 3 and 4.

The angular placed pieces at the forward end of the cockpit are cut from 1in. thick wood, pieces being about 2ft. long and 5ins. wide. Bevel the ends of these to butt up against frame 2, and to side battens across frame 3.

The Coaming

It will now be seen that the top edges of these pieces must be cut slanting, owing to the upward curve of the frame, to bring the cockpit pieces all level. To these a coaming is to be fitted, which should rise above the cockpit just 2ins.

These parts, cut from 3in. board, are shown in Fig. 4, not in proportion, and though lengths are given, owing to possible slight variations in building the canoe, it will be wise to measure for sure

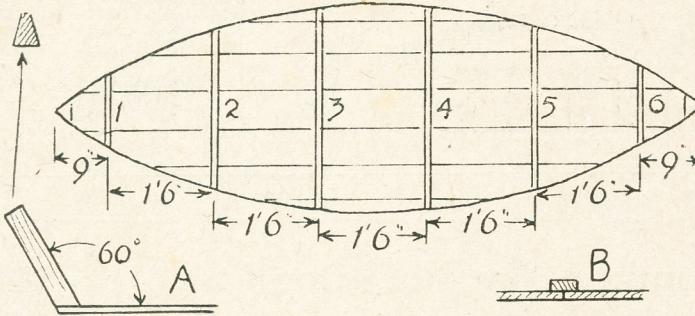


Fig. 1—A plan view of the floor and section of parts

stern posts accurately, a string stretched tightly across the posts should also lie exactly across the centre of each frame, and a well balanced canoe will depend upon this, so some little care and pains should be taken to mark out, and fix accurately.

Fitting the Battens

Now take the top side battens, bend these round the frames and screw them to the posts. See that their upper edges come to where the curve starts on frames 3 and 4, or, in other words at 12ins. up from the bottom. Owing to the slant of the frame sides, these battens will rise a little, about 2ins., at each end. Nail the battens to the frames. Take the bottom side battens and bend these around but do not fix them yet. Hold them in position and draw a pencil round their inner faces to mark the curve of the sides on to the bottom of the canoe.

Now remove the bottom battens and saw the bottom of the canoe to the shape as in Fig. 1. The battens can then be permanently fixed in place, but should cover the edges of the canoe bottom as well. Owing to the rise at each end it will be found that these

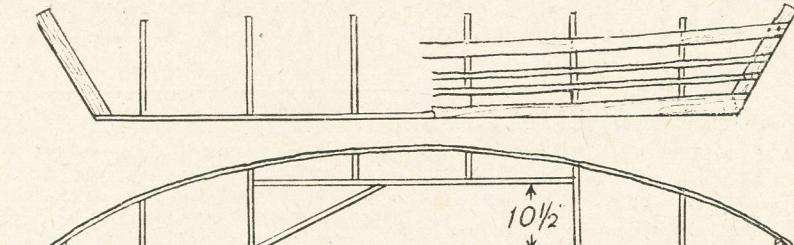


Fig. 2—Detail of frames

Fig. 3—Side view and plan showing position of frames and battens

pressed down, and nailed. Do not waste this surplus but scrape it off for subsequent re-use.

Now bend the intermediate side batten round and nail and screw them in position. The structure now will be as in Fig. 3, and side view (partly battened only) of the craft. Parts of the stems, sticking up above the battens, should be sawn off level, and the ends of the battens cut off level with the stern posts.

Where the top battens come against frames 1, 2, 5, 6, mark with a pencil, and from these marks curve the tops of the frames as done for frames 3 and 4; this job can be done in situ quite easily with a keyhole saw, without disturbing the frames at all. Now to mark and outline the cockpit of the craft.

Fig. 3 is a half plan of the craft, showing the area of the cockpit. The sides are

the cockpit opening. Parts (C) are bevelled at their forward ends to meet together neatly, and then nailed to the cockpit framing. Let them stand above the framing 2ins. The rear part (E) is fitted across next, then the two side pieces (D). The rear part can have its top corners rounded off or the whole top edge curved to correspond with the curve of the frame 5.

Covering

This completes the carcase, as we may call it, hull would be, perhaps, a better term. Go over all sharp corners where the canvas will come with glasspaper to remove roughness and splinters. Give the whole, inside and out, two coats of best quality lead coloured paint, and let both coats thoroughly dry before proceeding further.

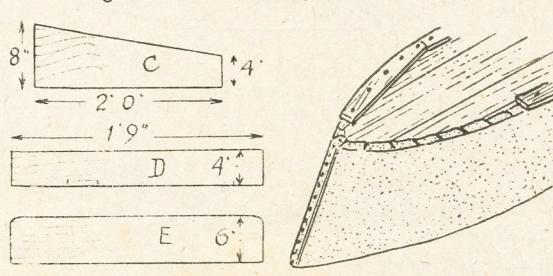


Fig. 4—Cockpit coaming parts

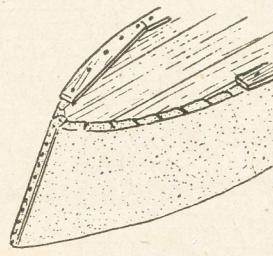


Fig. 5—Wooden covering to edges

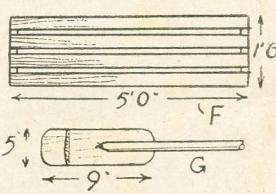


Fig. 6—Floor board and paddle shape

About 5½yds. of 48in. canvas will be required for covering. Let this be of strong, close woven stuff; tarpaulin quality is excellent for the purpose. Tack this lightly to the inside of the top side battens, then stretch over the sides and tack to the bottom, at about 1in. from the edges. Do not drive these tacks fully in just yet.

Stretch the canvas as tacking proceeds, to avoid creases. Cut off the surplus at ½in. from the tacks, at top and bottom, and leave just a surplus of 1in. at each end. The end surpluses are neatly folded together and close tacked to the edges of the stern posts.

Painting

Turn the boat upside-down. Now remove the tacks, a few at a time, and snip the canvas where necessary, so that it lies flat on the bottom and not creased up at all. These snips should not extend right to the edge, but stop short by about a ¼in. Lute the wood with the paint, press the canvas down, and tack along.

Cut a number of strips of wood, from waste, and saw one side to the curve of the boat. Lute these well with paint and nail and screw over the tacked canvas edges, as in detail, Fig. 5, to completely

seal the joints. The ends are similarly sealed, this time with triangular pieces of the wood, cut to the shape.

As these end pieces will cover the parts of canvas folded over from the sterns, and tacked down, to allow the parts to bed down well over the extra thickness, chisel out a shallow recess for the canvas to lie in. Turn the boat right side up and finish tacking the stuff to the top battens inside.

CUTTING LIST

Bottom (6)	½in. by 5½ins. by 9ft. 6ins.
Top side battens (2)	¾in. by 3ins. by 11ft.
Intermediate battens (4)	¾in. by 1in. by 11ft.
Bottom battens (2)	¾in. by 3ins. by 10ft.
Stem posts (2)	3ins. by 3ins. by 1ft. 6ins.
Frames	½in. by 6ins. by 13ft. run.
Frames	½in. by 3ins. by 20ft. run.
Frames	½in. by 2ins. by 12ft. run.
Cockpit	1in. by 2ins. by 14ft. run.
Coaming	½in. by 8ins. by 4ft. run.
Coaming	½in. by 4ins. by 6ft. run.
Coaming	½in. by 6ins. by 2ft. run.
Flooring	½in. by 3ins. by 20ft. run.
Remaining items from scrap.	

Cut two narrow strips of the canvas and tack these to the sides of the coaming and over to the sides of the canoe, at ½in. down from the top edges. Finish this job by covering the re-

mainder, fore and aft of the cockpit. Cut off any surplus at the edges of the canoe, just below the line of tacks, and to cover the cut edges of the stuff, and hide the tacks, screw or nail a length of ¼in. by ¾in. wood all round. This completes the work of construction.

Give the canvas two coats of boiled linseed oil, to which a little driers has been added, then paint any desired colour, 2 coats. The coaming and side strips can well be painted a contrasting colour to impart a pleasing, and less monotonous effect.

A floor of ½in. by 3in. strips of wood, nailed to a batten at each end, as at (F) in Fig. 6, can be put together to make a seat. This rests upon the bottom rails of the frames inside. A rubber cushion on these will add to personal comfort.

The Paddle

A paddle can be bought, but any reader desiring to make his own can do so easily enough. A good tough wood, ½in. thick, is needed for the blade, shaved down at the edges to ¼in. A handle of ash will complete, as at (G). Plane a flat to the handle and screw to the blade. A single paddle should be about 5ft. long, and a double one 7ft. 6ins. (131)

The worker with plastics can easily make this TOOTH-BRUSH HOLDER

THIS tooth-brush holder which will accommodate three brushes is made from a piece of Perspex 6ins. by 5ins. and 5mm. thick. The model is made to screw to some convenient woodwork in the bathroom.

This holder can easily be wiped, and it cannot be damaged by water. It is light but very strong, and is simple to fix to any wooden support. It is designed to allow the air to reach all the brushes, and will support a tube of toothpaste placed behind the brush heads.

In Two Parts

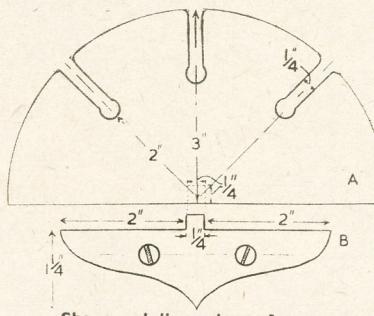
The diagram shows the model to be made of two parts (A) and (B). You can make part (A) in either of two ways. The first is to draw a template from the diagram on some gummed modelling paper, and then to stick it on the Perspex.

When the paper is dry, saw along the circumference of the semi-circle to release the shape from the Perspex piece. Now saw out the slots for the brushes, and just inside the ½in. contour lines of the slot for the pin of the support (B).

The other way is to describe the semi-circle with a pair of dividers, using the centre of a base-line on the Perspex. Then mark out the slots with a scriber. With this method it is most important to mark with the scriber only

those parts of the Perspex which will be cut out as waste.

Drill out the ½in. holes for the toothbrush heads. If you do the drilling either by hand or machine, use a piece of waste soft wood under the Perspex to serve as a base. You can secure the Perspex between two battens nailed to the waste wood with panel pins.



When part (A) has been prepared, the sharp corners of the slots should be removed with a 3in. half-round smooth file, and the sharp edges of the circumference should be rounded by rubbing with glasspaper No. 1 and No. OO.

To prepare part (B) use the template method. Make the pin ½in. tall so it is slightly higher than the 5mm. thickness of the material. Drill out, and counter-

sink the screwholes which are to accommodate wood-screws. It is very important to keep the shoulders each side of the pin, perfectly square. Test frequently with your little square as you file.

Fusion of Parts

When both parts are finished, make a trial fitting. It is better for the pin to be a little too wide than too small. You can always file or glasspaper to a tight fit. Now, with a No. 3 paint brush, or a new Gloy brush, smear on the sides of the pin and on the shoulders of part (B) a layer of concentrated (glacial) acetic acid; and fuse the two parts together. If your pin fits really well into the slot there will be no need for any external pressure. The model should then be left for 24 hours.

When you resume work, fix the holder in a smooth-jawed vice, and cross-file down the slight protrusion of the pin above the surface of part (A). You should have a very clean joint here when you clean the surface up with glasspaper.

Glass Surface

To give your model a perfect glass-like finish, remove all scratches with No. 1 glasspaper, then vigorously smooth down with No. OO glasspaper, and finally rub the Perspex with a piece of old stocking soaked with Silvo. Now rub off the thin film of white Silvo with a piece of clean silk, and your model will be ready to fix in the bathroom. (140)

The home handyman can easily make this CORNER UMBRELLA STAND

In the Corner Umbrella Stand, shown at Fig. 1 we have another example of a plain, light and useful piece of furniture. Such a stand as this would prove most useful in the small hall or a moderately wide passage where a corner occurs. A few ordinary household tools and the fretsaw will complete the job, and the actual wood used should not be found an expensive item.

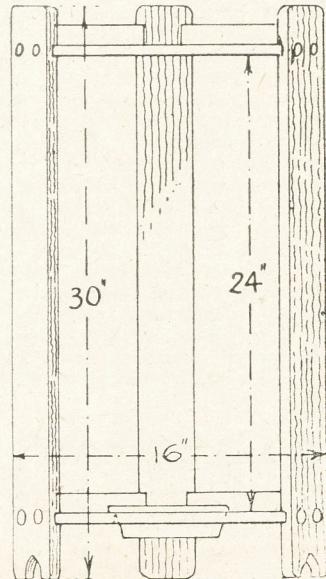
The stand is triangular in shape, and has three legs joined to the top and bottom board. The general dimensions are shown in the front view in Fig. 2, while the plan of the lower board and the upper board is given in Figs. 3 and 4 respectively. The wood selected should be good flat planed stuff, $\frac{1}{2}$ in. thick, the choice being left to the worker.

The Timber

To commence work upon the stand we require wood for the top and bottom boards. These two pieces measure 16ins. by $8\frac{1}{2}$ ins. Then wood for the three legs, each measuring 30ins. by 3ins., and four rails 9ins. long by $\frac{1}{2}$ in. wide.

Setting out the parts is really a most important part of the work, for on its accuracy the success of the job largely depends. The outlines of the top and bottom boards should be carefully copied from Figs. 3 and 4.

Notice that there is a 3in. flat bearing at the back edge for the back leg. The back edges, too, are cut to form an angle of ninety degrees so the stand will fit into a corner. The surfaces for the front legs also stand at ninety degrees from the back edges. Having set out one of the boards, cut and clean up and use as a pattern for marking the outline of the other.



2—Front view with dimensions

In the top board a triangular opening is cut as shown at Fig. 4, while in the bottom board an opening must be cut for the draining tray.

Draining Tray

A draining tray—generally made of black-japanned metal about 6ins. by $4\frac{1}{2}$ ins. should first be obtained before cutting is carried out so a proper fit may result. The wired and rolled top edge of the draining tray must rest on top of the board as seen in Fig. 2.

The legs are marked to the dimensions shown in Fig. 5, and two grooves $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. deep are marked across, each as shown in this illustration and in detail in Fig. 6. The lines of the grooves are cut across with a tenon saw and the waste wood afterwards cleaned away with a $\frac{1}{4}$ in. chisel. The fretsaw will be used to shape the parts including those at the lower end of the legs, measurements for which are given in Fig. 5.

Leg Fixing

The legs are next fitted to the boards. This done, the parts are finally cleaned off and all raw and rough edges smoothed. In fixing the legs to the boards, the joints should be glued and screwed. The heads of the screws are countersunk and afterwards filled with a mixture of sawdust and glue or wood filler pressed in and levelled off.

If desired the heads of the screws might be covered by gluing on small turned wood buttons as seen in the sectional diagram Fig. 7. There is no reason, however, why ordinary round-head brass screws should not be used, this makes a neat and workmanlike job, providing, of course, the slots in the heads of the screws are not injured.

Finally, the four rails which are screwed above—on top of the two boards—are glued and screwed in place (see Fig. 8). The rails must be shaped to an angle of 45 degrees where they meet the back leg and the top edges of them rounded

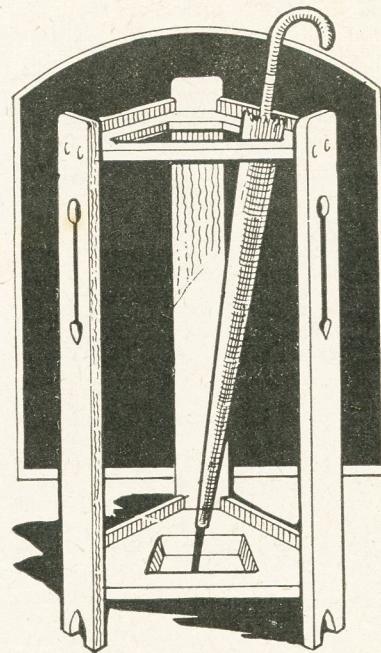


Fig. 1—A practical stand for the home

off neatly. It will be found that these four edge rails greatly help to strengthen the boards.

Some additional strips of wood about $\frac{1}{2}$ in. or so wide by $\frac{1}{2}$ in. thick might be glued along underneath the side edges of the boards as additional stiffening. These are seen at A, Fig. 8.

If the worker desires to add a touch of ornamentation to his work, he can easily do so by cutting a simple open fret to each front leg as shown in Fig. 1. The fret should be kept narrow, and must of course be cut before the legs are fixed to the top and bottom boards.

A suitable finish should be applied to the wood, after it has been cleaned with fine glasspaper. Stain and wax would look well for oak, and rich dark stain with french polish for mahogany.

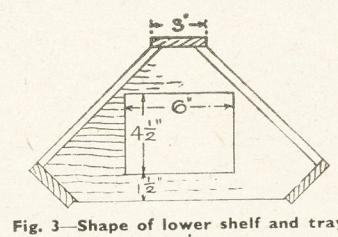


Fig. 3—Shape of lower shelf and tray opening

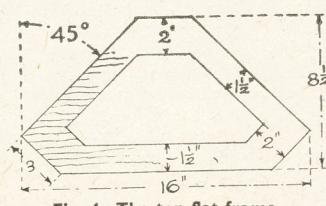


Fig. 4—The top flat frame

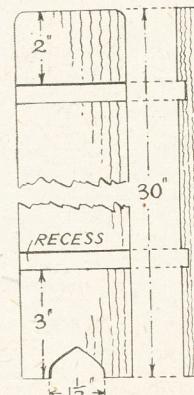


Fig. 5—Leg details

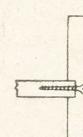


Fig. 6—Rail grooves



Fig. 7—Screw covering

A mechanical garden novelty to make is this POLICEMAN WINDVANE

A WORKING figure windvane is an amusing feature of any garden, interesting, too, as it shows the direction of the wind as well. The 'Policeman' specimen illustrated is a fairly good example of such novelties, the officer working his arm most energetically to indicate the way of the wind. Full size patterns of the policeman are printed on page 175.

A plan and side view of the windvane are given in Fig. 1, the figure and rotary vanes being omitted. The base is a length of hardwood, oak or beech. This should be planed up to dimensions given. At the centre, a plate of stout sheet brass (A) is screwed across 1 in. wide.

Extension

An extension piece of the wood (B) is cut to size and shape shown and screwed and glued underneath the base, exactly at the centre. This piece measures just 1 in. across at its bottom, and here a second brass plate is screwed across.

Piece (B) may not be able to be cut from the solid wood, in which case two or more pieces can be glued together to make it up. Centre the top plate (A) and there drill a $\frac{1}{8}$ in. hole through it, going well down into the wood as well. Centre the bottom plate and drill that the same, and take great care to get these holes truly in line.

Now remove the plates, and continue the hole in the wood right through. An auger or spoon bit may be necessary here, as the hole is too long for a centre or drill bit. Enlarge the hole a little with a round file, then replace the brass plates. The base should now swing easily round on a $\frac{1}{8}$ in. metal rod, as a pivot.

Rocker Motion

A rocker (C) is now required; this is set in motion by the rotary windvane and actuates the figure's arm. The rocker is composed of two pieces of stout brass rod, $\frac{1}{8}$ in. wide, illustrated at (D) and (E) in Fig. 2. Cut these to length. Bend (D) across the dotted lines to make the shape shown at (F). Part (E) has also the short piece at the

left end bent at the dotted lines to right-angles. The remainder is drilled at its centre for a stout $\frac{1}{8}$ in. roundheaded brass screw. Part (D) is soldered to the straight end of (E), as seen in detail (F), which shows the completed rocker.

Take the base part in hand once more, and run a pencil line along the centre of it, lengthwise. Touching this line, at the place indicated in the side view, cut the slot shown, making it $\frac{1}{8}$ in. wide and 1 in. long. Now fit the rocker with the screw to part (B) at $2\frac{1}{4}$ ins. down from the top, and in such position that the bent end (not part (D)) is just under the centre of the slot. A washer should be placed between the base and rocker to lessen friction.

On the bent brass end make a mark directly under the centre of the slot. Remove rocker, and on this mark, solder a piece of wire twisted to make an eye, to which the connecting rod, which conveys motion to the moving arm of the figure, can be hooked. Now replace the rocker.

Rotary Disc

To impart motion to the rocker, the rotary windvane carries a cam-shaped metal disc. This is shown in Fig. 3. Cut the disc from stout sheet brass, mark its exact centre and from there make a second mark with a punch just $\frac{1}{16}$ in. away. Here drill a $\frac{1}{16}$ in. hole. Over this solder a brass collar, with set-screw. Fix the cam to the end of a $4\frac{1}{2}$ in. length of $\frac{1}{8}$ in. round steel rod, the axle of the windvanes.

To carry the rod a pair of metal bearings will be needed. These are cut from $\frac{1}{8}$ in. wide brass rod to the length at (G). Drill the bearing holes, also two holes for fixing screws, and bend at

right-angles across the dotted line. Screw these to the underside of the wood base, approximately where shown in Fig. 1.

Adjustment can come afterwards. Now slip the axle rod in its bearings, set the cam piece on and see it comes in the centre of part (D). Give the rod a twist with the fingers, and this should set the rocker moving up and down.

For the rotary windvanes, cut a disc of stout tin, or thin sheet brass, to size at (H), in Fig. 4. Centre this, drill a $\frac{1}{16}$ in. hole, and over the hole solder another brass collar, with screw. It may be mentioned that the collars and rod can be Meccano parts, and so solve the difficulty of both fitting the discs on, and trouble in obtaining the materials. To this disc the 6 vanes will be fixed, at equal distances apart, as shown by the dotted outlines.

A pattern for the vanes, drawn over 1 in. squares, is given at (I). Copy this full size on thin paper and stick down with gum to a suitably sized piece of (Continued on page 175)

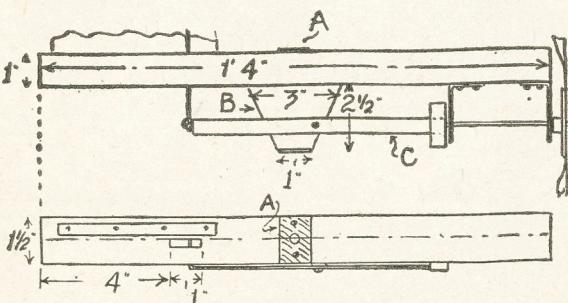
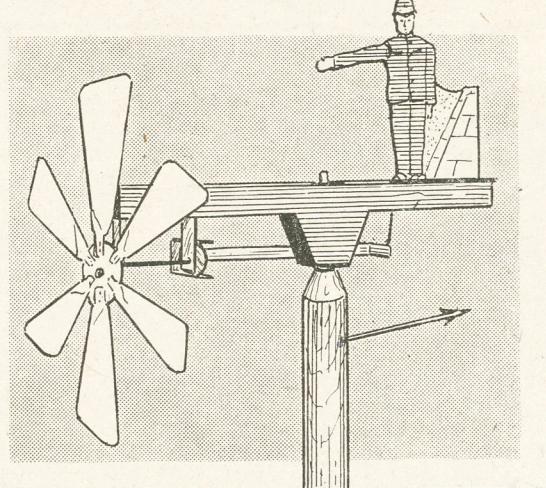


Fig. 1—Side view and plan with measurements

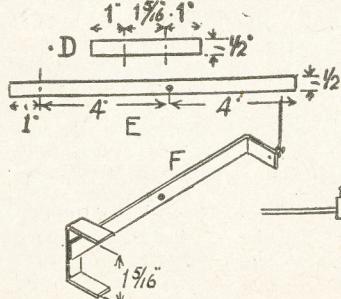


Fig. 2—Details of metal rocker

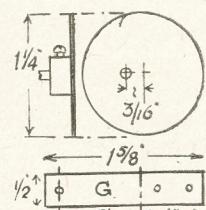


Fig. 3—The disc

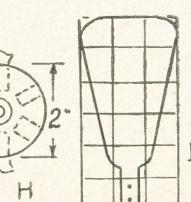
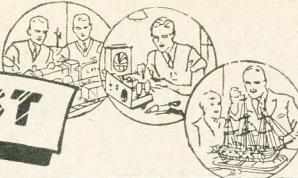


Fig. 4—Vane disc and shape



REPLIES OF INTEREST



Damp Walls

WOULD you tell me how I could stop dampness from coming through the walls of my workshop? (F.H.—Athlone).

YOU do not state what the walls are made of, but if brick, a rendering of cement to a height of 18ins. may help, and a coating of tar over the rest. You can purchase a special compound for this from a builder's merchant. If the walls are of wood, a coating of creosote is sometimes helpful. In both cases, the inside floor should be of concrete and some ventilation is advisable to help dry out the atmosphere.

Rexine Renovator

THE Rexine of some furniture of mine has become sticky, with the result that it marks easily where people sit. Could you suggest a remedy for this? (J.N.—Wednesbury).

THE trouble you mention often occurs where furniture is kept in a damp room, also through using inferior polish. It can usually be cured by rubbing very gently over the surface with pure turpentine on a clean rag. Use only enough of the turpentine to clear away the stickiness and change the rag as it becomes dirty. Polish the Rexine after treatment, with a clean soft duster. Use no furniture polish, only the duster itself. Repeat this after a few days if necessary.

Photographic Faults

IHAVE just started making my own prints from negatives. With some I get very good results, but with others I get a brown stain. (G.E.G.—Burnham).

THERE are three main causes for stains on gaslight or bromide prints. (1) Keeping the print too long after developing before plunging it into the fixing bath. (2) Omitting to completely immerse the print in the fixing bath and moving it about while under the surface. (3) Using a fixing bath that has become exhausted through passing too many prints through it.

Luminous Paint

COULD you supply me with information on making luminous paint? (J.D.H.—Bristol).

LUMINOUS paint can be made as follows:

Mix 20 parts by weight of calcium oxide (burnt lime)

6 parts sulphur, 2 parts starch

1 part of a $\frac{1}{2}$ per cent solution of bismuth nitrate

0.15 part potassium chloride, and 0.15 part sodium chloride. Mix thoroughly in a crucible, then heat in a furnace to a temperature of 1,300

centigrade. The resultant powder can be mixed with clear varnish, and used as a paint.

'Dead' Table Tennis Table

OUR tennis table is 'dead'; there is no bounce at all, and I would like to know if there is any cure. (W.R.H.—M.E.L.F.)

THE plywood covering is too thin, and of too poor a quality. Good stuff of $\frac{3}{8}$ in. thickness, glued to an

underframing of deal battens would serve you better. Solid wood not less than $\frac{1}{2}$ in. thickness can be used, battened underneath for rigidity. The joints should be close and well glued, and afterwards planed smooth for a flat surface.

Rusty Ice Skates

IHAVE a pair of ice skates. Although the chromium plating is quite good, rust is beginning to show gradually in spite of my careful drying and smearing with oil after use. (G.K.—Hendon).

IT is inevitable that with the passing of time, chromium plating should begin to show rusty places. There is nothing that can be done about it, except to clean the spots and apply a metallic (silver) paint or have the skates properly replated.

Marking your Tennis Balls

MARKING tennis balls in the usual way with indelible pencil is very tedious and unsatisfactory. When the balls become soiled it is necessary to examine them minutely to decipher the marks. Marking one's balls is a necessary job. Why not do it properly with a stencil? The cost is almost negligible and the time taken is not great considering that the stencil will last many years.

The Mould

Start by taking a sheet of newspaper and a sheet of brown paper and tearing each into small pieces, about 1in. square. Put the two varieties of paper separately in a bowl of water until they are well soaked, and then lay them on a board to drain off.

Prepare also, some thin paste by pouring boiling water on flour and stirring well. Take an old tennis ball and cover the top half with 'silver paper' to stop the wet sticky paper about to be applied from sticking to the ball.

Take pieces of newspaper and cover the top half of the ball with them. Brush paste over them, and apply a second layer of brown paper and continue thus. The idea of using two sorts of paper alternately is that it is easy to ascertain that the thickness is being built up evenly and not too much in one part. It will usually be found that the paper will not cling closely at the open end.

In this case, take a strip of gummed paper, and apply it all round the 'equator'. Build up about a dozen thicknesses in this way, pressing down

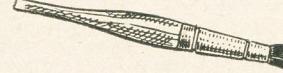
well, and using plenty of paste.

The paper must be allowed to dry thoroughly, and not hurriedly. When really dry, remove it from the ball and trim the ragged open edge. Glasspaper lightly. A stencilled design must now be cut in the top with a sharp penknife or razor blade of the Ever-Ready type. This design need not be complicated, or contain fine detail or thin 'ties'. The drawing shows a conventionalised W.A.B., but it is not necessary to use initials.

Simple Shapes

Simple designs such as diamonds, squares, stars, hexagons, etc., can be used. When the design is cut, the stencil is given two or three coats of shellac varnish (made by dissolving shellac in methylated spirit).

A stencil brush of the type illustrated can be obtained at any artists' shop very cheaply. For 'ink', oil paint can be used,



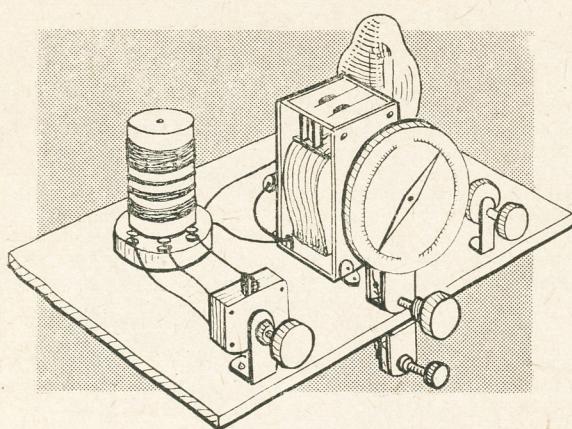
Stencil of papier maché being made on finished stencil applied.



as it is waterproof. Pour a little in a saucer and apply with a stabbing motion of the brush.

Once the stencil is made, the marking is done very quickly and distinctively. Should it wear off it can be equally quickly put on again.

Increase the use of your amplifier by adding A GRAM-RADIO UNIT



CONSTRUCTORS who have made an amplifier for record playing can extend its field of usefulness by adding a unit which will also enable radio stations to be tuned in. A switch can be added so that radio or gram operation can be selected at will, and the many advantages of this will become immediately apparent.

Various circuits can be employed in the radio unit, and the simplest type requires very few parts. Units may be made up for use with either battery or mains operated amplifiers.

Practical Arrangement

The location of the tuning dial and other controls will depend on the type of cabinet already in use for the gram amplifier. If this cabinet is of the opening type, complete with turntable, there may be sufficient space beside the latter for a tuning dial. With other cabinets it may be necessary to mount the tuning dial and other controls on the side or front.

The space required for the simpler type of radio unit is very small. A separate cabinet is not recommended because this only introduces wiring difficulties, besides being much less compact and convenient.

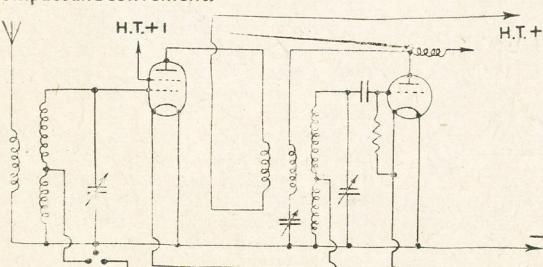


Fig. 3—Circuit with high frequency stage

By having the unit in the amplifier cabinet, the latter becomes a complete radiogram, forming one unit complete with speaker and record-playing attachments.

Simplest Circuit

The simplest circuit which will give good results is shown in Fig. 1. It consists of a dual-range coil with tuning condenser and dial, together with the grid condenser

and leak necessary for detection. Reaction is added to increase volume and range, and the unit enables the first valve already in the amplifier to act as detector.

With many amplifiers, this is sufficient. By adding this unit, 2 and 3 valve amplifiers will become 2 and 3 valve receivers, and so on. These will give good speaker volume on the majority of nearer B.B.C. stations, with some foreign stations in addition, if used with a good aerial and earth.

In this, and also in the following circuits, the leads marked 'Filament' are taken to the filament sockets of one of the valveholders in the amplifier. If an earth is used, join it to the negative lead here. A wire is also taken from the coil to the anode of the first valve in the amplifier.

A switch is shown with two positions marked 'R' and 'G' for Radio and Gram

operation. When in the 'G' position the pick-up is connected in the usual way. Turning the switch to 'R' connects the tuned circuit, for radio reception, and this switch can be mounted in any convenient point, possibly near the gram turntable.

All the leads mentioned are left unchanged, of course, so that once the unit has been fitted, it is only necessary to operate the switch to set everything ready for radio or gram operation.

For preference, the grid and anode leads should not be longer than necessary. However, no trouble is likely to arise here if the unit is in the same cabinet as the amplifier.

Long and Medium

Complete details for winding tuning coils for Long and Medium Wave operation have been given in past issues of 'Hobbies Weekly' and it is not proposed to repeat these here. If a ready-made coil is to be purchased, any dual-range coil with reaction winding will be suitable. These are obtainable with tag and terminal connections, or with coloured leads, in some cases, and the connecting instructions provided by the manufacturer should be followed so that the various windings are wired up in the correct manner.

Separate Detector

If additional range and volume is wanted on radio, then a new valve, especially for detection, should be added, as shown in Fig. 2. The tuning arrangements remain exactly as already described. In addition, a few extra parts are required to couple the new valve to the gram amplifier, as shown.

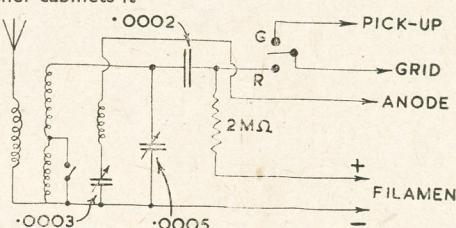


Fig. 1—Circuit including gram radio unit

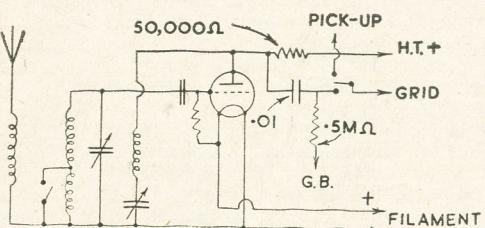


Fig. 2—Circuit with detector valve

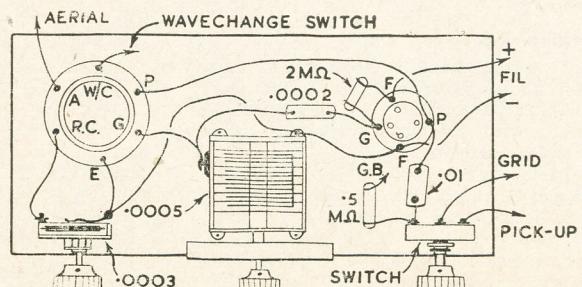


Fig. 4—Layout for circuit shown in Fig. 3

The two-way switch operates in the same manner as before; if current economy is important, a double pole switch can be used and this can be connected so that one filament lead is interrupted when the unit is set for gram reproduction. The extra valve will then be switched off.

Some amplifiers already have a volume control potentiometer connected from the first valve grid to grid bias; if so, the .5 megohm leak in Fig. 2 can be omitted.

The tuning condenser and associated component values are not given because they are the same as in Fig. 1.

This circuit is particularly useful where the amplifier is a small one using only one or two valves, but it is scarcely necessary with three or more valves, when the circuit in Fig. 1 is sufficient.

High Frequency Stage

Where good radio range and selectivity are particularly important, the circuit in Fig. 3 can be used. The detector (second valve) is the same as shown in Fig. 2, but a screen grid or high-frequency pentode is added before it.

A two gang tuning condenser should be used, with two matched coils. The range of reception will then be considerably increased, the whole, in conjunction with the amplifier section already in use, forming a three, four, or five valve receiver, according to the number of valves present in the amplifier.

The radiogram switching is not shown, being the same as already described. As with the circuit shown in Fig. 2, a short wave range can be added, if required.

Practical Layout

Little difficulty in construction should arise, but a wiring plan of the circuit shown in Fig. 3 is given in Fig. 4. All the parts can be mounted on a piece of wood, as shown in the illustration. When the unit is completed, it can then be inserted in the cabinet, tuning dial and control spindles coming opposite holes cut in the appropriate positions.

If the circuit in Fig. 1 is being used, the valveholder and coupling components will be omitted, the other parts remaining as shown. The second contact of the wavechange switch, which may be mounted below the tuning knob, is taken to the filament negative line. Alternatively, it may be desired to mount this switch to the right, and place the radiogram switch near the turntable.

Mains Operation

The same circuits can be used and will be found satisfactory, but a few minor modifications will be necessary because of the different valve types used in mains receivers.

In Fig. 1, the leads marked 'Filament' should be omitted. Wire the 2 megohm grid leak across the .0002 mfd. fixed condenser and connect the negative wire indicated to the H.T. negative line of the amplifier (which will usually be the metal chassis).

In Fig. 2, the leak should also be in parallel with the fixed condenser, as explained. In addition, keep the valve filament (or heater) connections separate from other leads, and take them to the filament circuit in the amplifier. The circuit in Fig. 3 should be similarly treated.

Power Supplies

The unit in Fig. 1 requires no power supplies. The others take their current from the same batteries as are already in use to operate the amplifier. By connecting to the filament circuit as shown, the extra valve or valves will be switched on and off when the switch controlling the amplifier itself is operated.

With mains receivers, the current will be taken from the amplifier power-supply section, as described. Normally, there will be sufficient power to operate the extra valve or so which has been added without difficulty. Do not overlook the usual precautions necessary when dealing with mains apparatus; employ well-insulated connections, and do not touch joints or metal parts

which are connected to the mains.

Valves to Use

For the battery circuits, a valve such as the Osram HL2, Cossor 210HF, Mazda HL2, Micromesh HLB1, or Mullard PM1HL or PM2HL can be used, or any of its equivalents. The circuit in Fig. 3 will require a screen-grid or H.F. pentode such as the Osram VP21, Cossor 210VPT, Mazda VP215, Mullard VP2, or any of its equivalents. These are pentodes; screen-grid valves such as the Cossor 220SG, 215SG or its equivalents can be used also.

Mains valves depend upon the heater voltage. Four volt valves are extensively used, types such as the Osram MH4 or Cossor 41MHF or its equivalents being suitable for detection. For high-frequency amplification, Osram VMS4, Cossor MVSG or equivalents can be used. In some receivers, however, other heater voltages will be used and to obtain suitable valves for use with these the valve type numbers in the receiver should be checked against a valve list.

A Simple Crumb Tray

A BRUSH and crumb tray set can easily be made by the handyman, and will be very acceptable to any housewife. The set shown in the diagrams, was made from $\frac{1}{8}$ in. ply, with a few strips of felt about $\frac{1}{16}$ in. thickness.

Commence by cutting the parts for the tray from $\frac{1}{8}$ in. ply, to the sizes and shapes shown in Fig. 1. Rub down all edges and surfaces with glasspaper, chamfering the front edge of the tray to a sharp edge. Now glue the handle to the back, slotting the two together as seen in Fig. 3. Glue the back and handle, and the sides, to the base, thus completing the tray.

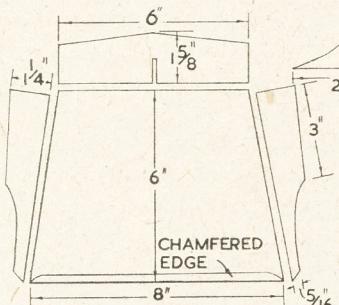


Fig. 1—Outline of parts

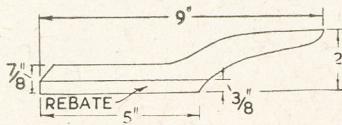
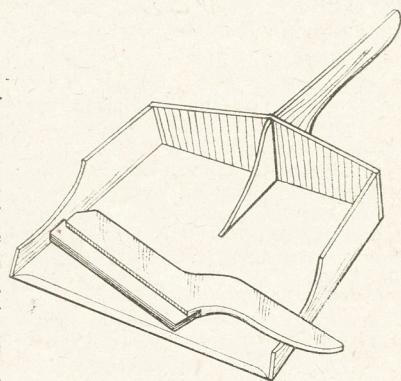


Fig. 2—Shape of scoop



Cut two pieces of $\frac{1}{8}$ in. ply to the size and shape shown in Fig. 2, and rebate the bottom edge of each piece, by removing one layer of ply from each. These must be removed from opposing faces of the two parts, so that when stuck together, the parts will leave a groove along the bottom.

Before gluing these two brush parts together, cut several layers of felt, $\frac{1}{16}$ in. deep and 5 ins. long, to fill the groove completely, and glue them well in at their top edges. The second half of the brush can now be glued on, and the handle shaped with glasspaper to a comfortable grip. All other surfaces should be made smooth.

The completed articles will now appear as above, and can be either stained and polished, or painted. A medium or dark stain, finished with a wax polish is recommended, and will make this useful set quite attractive.

Enjoy the sunshine in comfort in A GARDEN LOUNGE

WE are giving this week instructions and working details for the making of the sunshine lounge shown in our illustration, Fig. 1. This can be used in the garden on the lawn, or at the seaside and it is portable and, therefore, easily carried down to the sea.

It would, perhaps, be more appropriate to call it a chair, for it can be well used as such, as its low position provides for sitting and lounging comfortably on the raised back.

As will be seen from the plan and side view, the chair is made up of a number of frames held together strongly by cross rails or bars. The large bottom frame is covered with stout canvas, and is supported by two leg frames which fold up flush inside the main frame, as the side view in Fig. 2 shows.

Strong and Compact

It will be seen from this diagram how these leg frames are hinged and are held at their required angle by contact with the cross bars. The head frame is also covered with the canvas which should be secured to both the cross rails and allowed to come down apron-wise over the canvas of the main frame. Like this, all draughts are excluded and a continuous canvas support thus made.

The head frame is made removable for ease in folding or packing by the simple method of attaching a light iron bracket to each side rail. The forward end of the iron bracket is formed into a type of hook which goes through an eye screwed into the top edge of the main frame rails.

Then at the back of the iron bracket,

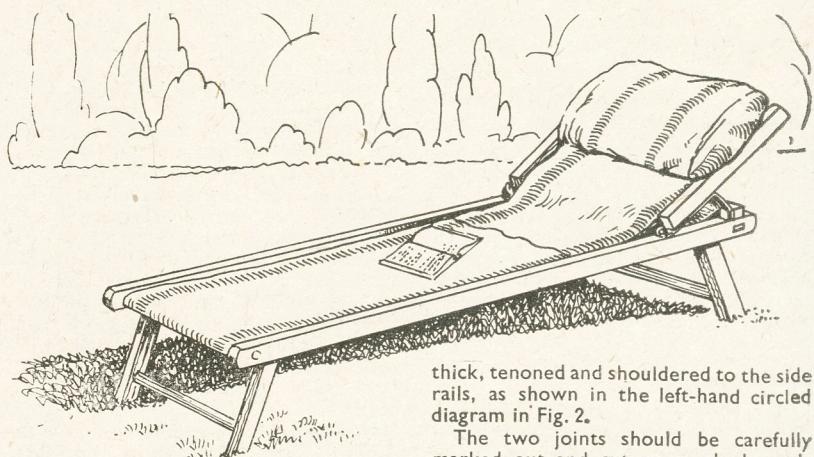


Fig. 1—Just the thing for a lazy afternoon

on the upright part, there is a projecting lug which fits into a corresponding sinking made in the side rails. A detail of one of the brackets is shown in Fig. 3, with the holes drilled for the fixing to the head frame.

It will be seen that to get the head frame in place on the main frame, it is first held in a more or less vertical position with the hooks just level with the eyes. Then when the frame is lowered backwards the hooks fall into place and the bracket lugs thus also fall into place in their respective holes in the frame. Quite a simple operation if the various parts are made up accurately.

The Canvas

The main frame and, indeed, all the frames including the legs, should be made of hardwood, and the canvas be of striped chair canvas of heavy make 18ins. wide. Two side rails 54ins. long by 2ins. by $\frac{1}{8}$ in. will be cut and cleaned and the ends rounded, as seen in the side view in Fig. 2. Then, one end of the

frame—the head end—is held by a cross rail (A). This consists of wood 22ins. long by 3ins. wide by $\frac{1}{8}$ in.

thick, tenoned and shouldered to the side rails, as shown in the left-hand circled diagram in Fig. 2.

The two joints should be carefully marked out and cut, as much depends upon the cutting and fixing of this rail for the rigidity of the finished frame. As an extra fixing, if this is found to be necessary, two iron angle plates may be screwed to the cross rail and to the projecting ends of the side rails, see the dotted lines in the view Fig. 2.

Foot Rail

The rail at the foot of the frame consists of a 1in. diameter rod 22ins. long. This rod is shouldered down to $\frac{1}{2}$ in. diameter and let into corresponding holes in the side rails, as seen in the right-hand circled diagram in Fig. 2. When the ends of the rod have been driven into place a nail may be inserted through the rails to pass through the ends of the rod, thus making a very secure fixing. The heads of the nails should be well driven into the rails to prevent damage to fingers and dress.

The make-up of the head frame is simply explained in Fig. 4. Two side rails measuring 18ins. long by $1\frac{1}{2}$ ins. by $\frac{1}{8}$ in. are connected by a square lower rail 1 $\frac{1}{2}$ ins. by $\frac{1}{4}$ in. and 22ins. long and a top rail of 1in. diameter rod also 22ins. long. The fixing of the rails is shown in the enlarged detail Fig. 4, both tenons being accurately cut to make a tight fixing. Nails again may be inserted through the tenons.

Each frame consists of two side rails 10ins. long by $1\frac{1}{2}$ ins. by $\frac{1}{8}$ in. connected

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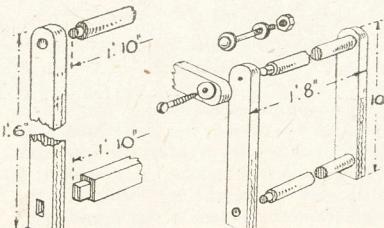


Fig. 2—Side view and plan with details of joints

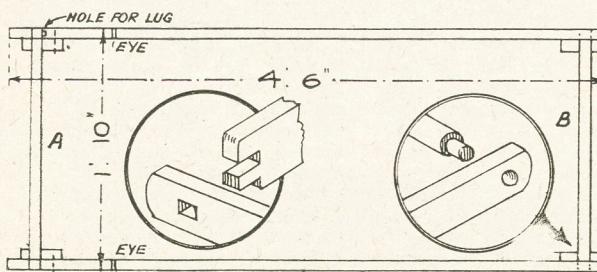


Fig. 3—The retaining lug shape

Fig. 4—Headframe construction

During the summer is the time to undertake these SHED REPAIRS

WITH timber scarce it will be a good plan this year to repair your shed during the summer months. You will then have a chance to do this when you are certain that the wood of the existing roof is dry. To put roofing felt over damp boards is just asking for trouble.

Roofing felt in several well-known brands is now available and one roll contains, as a rule 108 sq. ft. in either heavy-weight or standard. As the roof is the main part which gets so neglected, we will deal with this in the best way possible.

Roof Covering

You must have a proper foundation for any refelting process. In fixing it you must consider the position regarding rain and wind. Before re-felting you should consider whether you have sufficient rafters (see Fig. 1). Too few of these will mean a bumpy roof and consequent splitting of the felt. One

See nails are well driven home. Do not, under any circumstances, leave nails sticking up or bent over.

It may pay you to rip off the old roof this year and rebuild it to get the best coverage from the materials you have. If you do this and add a gutter (which is always wise) be sure to give a good overhanging section, as shown in Fig. 2. This will ensure any surplus water dropping clear of the shed.

Should the boards be a little decayed at the ends and so causing gaps under the felt, it would be best to cut straight along as shown in Fig. 3 and add a facia board. Small holes can then be filled in with pieces of wood cut to fit. Do this rather than leave even a small 'pot-hole'.

Many workers are lucky to have a stove in their workshop or, perhaps, they are planning one for the future. In fixing this take the flue pipes through the side and not the roof. The best position is shown in Fig. 4.

You may spend a lot of time in your shed and, therefore, a most important

Use the correct nails, which are known as 'clouts', having large heads and are galvanized. Do not use nails that will penetrate the boards; for instance, use a $\frac{1}{2}$ in. nail on a $\frac{3}{4}$ in. board.

Fixing Hints

Start fixing at the eaves. Bend the felt over about 2ins., so that it hangs to prevent the ends of the boards getting rotten. All cross vertical joints should be lapped 12ins., and well nailed at 2in. centres. You must protect your top ridge well. To form a capping for this, cut a strip of felt 12ins. wide and fit over each side for 6ins.

If the roof is fairly large and you are likely to expect damage from winds—such as you would in an exposed position—you can reinforce the job by adding wood battens. It is a good plan to screw these and run them from eaves to top of roof. If you fit these over the rafters,

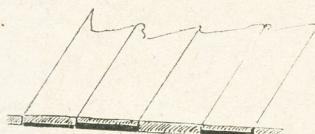


Fig. 1—A level surface

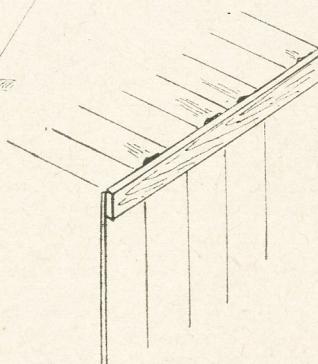


Fig. 2—Section of gutter

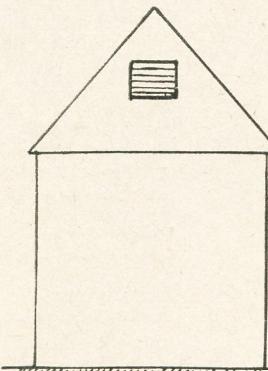


Fig. 3—An end board for strength

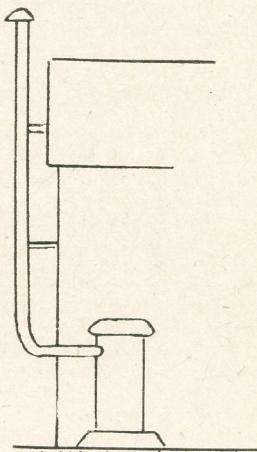


Fig. 4—Section showing stove fixing

split and the water is in. Here is a simple guide. For $\frac{1}{2}$ in. boarding rafters 2ft. centres, but with $\frac{3}{4}$ in. boarding have 3ft. centres or 1in. boards 3ft. 6in. centres.

Next, check up the thickness of the boards. It is most essential to have the boards of equal depth. In the sketch you will note this is shown by packing with thin stripwood or lath.

point is ventilation. You should always put the ventilation in at the highest point, as shown in Fig. 5.

Do not spoil or damage your felt before you use it. Unroll it on a smooth surface, free from sharp stones and do not walk over it. Be sure the wind cannot blow it about. A lino knife is a good cutting tool used with a batten as a straight edge.

Lounge—(Continued from page 169)

by 1in. diameter rods shouldered down and let into the uprights, as shown in the detail Fig. 5. Now, if the leg frames are to be connected to the main frame by screws running through them into the tops of the leg frames, the top cross rod of same will remain. If, however, it is decided to fix the leg frames to the main frame by means of bolts and nuts, then this top round rod can be dispensed with. The bolt, nut and washers are given in the detail Fig. 4.

The leg frames go inside the main frame, see plan Fig. 2 and also side view. The dotted lines in the side view show how the legs fold up, and when open are held by the cross rails of the main frame. The canvas, in being put on, is first turned over the top rail twice and firmly and closely nailed. Then it is carried down and brought over the foot rail twice so that the weight is distributed over the lap of the canvas, and here again firmly nailed.

they will add to the strength of the roof. Nails should always be about 2ins. apart.

Should your roof be large and inclined to be springy, then you will do well to add some additional cross braces inside. The first cause of leaky roofs is often the sagging of the boards due to insufficient support. Attend to this before anything else.

(129)

Some lengths of 2in. wide strong webbing may be added as desired to give uplift to the canvas covering crossways, if found necessary. Also an additional round rod may be put midway between the two side rails of the main frame.

Two coats of clear varnish may be given to the cleaned-up wood, or the whole thing painted with two coats of suitable paint in bright colours. (178)

Add to your comfort by erecting these CAMP WIND-BREAKS

GOOD campers never go to camp to be uncomfortable. Indeed, they do all they can to make the alfresco life as easy and cosy as possible, and have absolutely no time for the tenderfoot type who thinks he must of necessity suffer the utmost limits of discomfort when living in a canvas home.

Certain more spartan conditions have to be put up with, of course, but the old pioneer never believes in being cold when a little ingenuity will make him warm, or lying on a hard bed when a softer one can be made.

A beginner has to be a tenderfoot at first, but he should quickly grow out of this stage and bring his inventive faculty to work in the making of helpful items. Fighting nature is half the fun of camping.

Simple Barriers

The comfort-producing gadgets that old-timers can turn out are almost without end and one of the most useful is the 'wind-break'. This can be anything from just a low barrier behind which you sit, to a larger protection, say, for the camp fire. But a 'wind-break' is not a hut and its purpose is just to put something between yourself and a steady wind that may come sweeping across the camping ground for days on end.

Such winds are not necessarily cold, but they can be a nuisance, blowing about any papers you are holding, or in the case of the cookhouse, blowing leaves and bits of grass into the food. So a 'break' is really very handy.

The simplest wind-breaks are made of bracken which is usually plentiful during the camping months. A good amount is required and the collecting should be generous. The fronds are pulled as low down as possible and care must be taken while bringing in to prevent the tops from becoming broken. Crushed limp bracken is useless for the purpose in hand.

For Sitting

Fig. 1 shows a low wind break for sitting behind. Required are four stakes which are placed as shown, driven into the ground. The bracken is then interwoven in strands (two or three pieces together) alternately passing behind and in front of the uprights. The main thing is not to have the uprights too far apart and to be liberal with the bracken. Press each alternate 'strand' well down on to the one below before putting in the next.

By adding supporting pieces as seen in the inset, this wind-break can also become a back rest, the whole gadget becoming a tight and very cosy retreat behind which to read and enjoy the sun without the nuisance of the breeze.

A similar but much taller 'break' can be made for the camp fire (as Fig. 2). Here quite long stakes are required, nearly as big as a person standing, and a cross-bar is lashed on top as (a). It is best, too, to put up guy lines to give full rigidity against the blast.

Quite a lot of bracken is required here and the good camper will not think it beneath his dignity or lowering to his pride if, should there be an odd ground sheet about, he uses this for part of the filling.

It cannot be stressed too much that the old-timer uses whatever he can to attain his purpose, and is not tied down to set rules, but the good pioneer also finds that generally he can get all he wants in nature's storehouse if he looks far enough, and that he has seldom to solicit the aid of commercial items.

A more elaborate 'wind-break' for the cooking fire is shown in Fig. 3. Here we fit a roof also, which is a second framework made quite separately, with a cross bar at the top and bottom, thinner bars going in between. There will not be much strain at the intersections and the lashings can be of quite a simple type. The 'binder' need be no thicker than strong string.

Lash the Roof

Required also are two further stakes (b) slightly taller than those at the back. The roof is placed on top of the break already erected and lashed, the front end thus being held by the two taller uprights. The arrangement is now complete, and if well erected and the stakes sunk a little distance, it will stand quite nicely, but final rigidity is best given by four guy-lines attached as shown and set out at a slight angle.

In making a roofed break like this, do not fall into the common error of making it just too low, which means

continual stooping.

The best of shelters of the kind described is that once the frame is up you can keep improving this with little trouble, even to the day that camp is broken. Then the 'breaks' should be taken carefully apart, the bracken

FIG 1

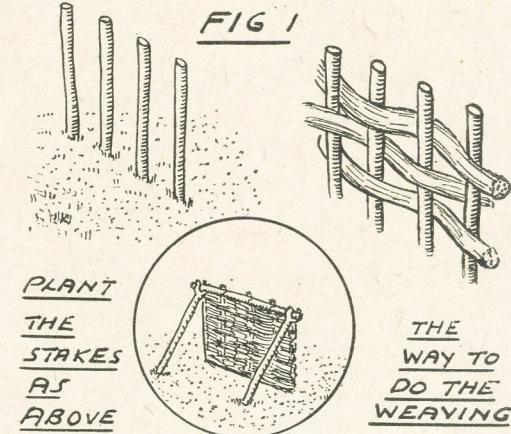


FIG 2

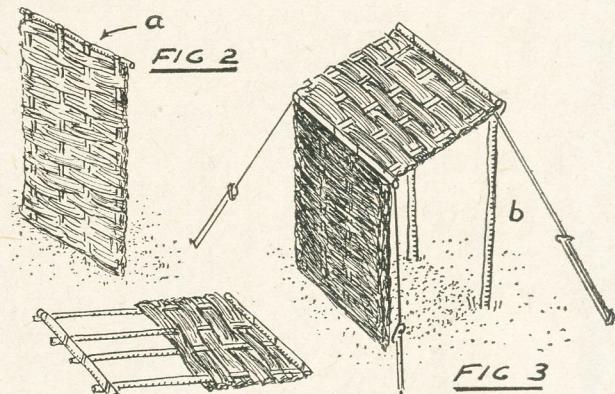


FIG 3

either burnt or buried, and the stakes put away out of sight, for nothing looks worse than a camping ground with derelict and broken-down gadgets lying about.

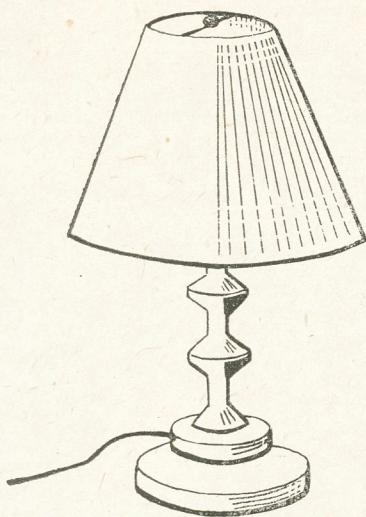
Safe Storage

If you will be using the ground again, the stakes could be stored somewhere and retrieved for further use later on. Should the ground be used by you as a week-end patch, then there is no doubt that the owner would let the wind-breaks stay in position during the intervening days, but see the owner of the ground about this.

Also make sure that the breaks are really solid and that they will not scatter bits all over the place should a really extra strong wind happen along.

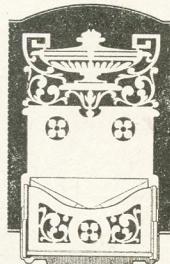
Careful selection in the first place will prevent this likelihood.

A few odds and ends can be converted into another COTTON REEL TABLE LAMP



WHILE materials are scarce, and finished articles expensive, an accessory to the home which one can make at a low cost, is well worth the time spent on it. Indeed, this table lamp can be made from odds and ends which are quite easy to obtain, with a minimum of time and trouble. The author made one himself for a few shillings, and is proud that no visitors

A LETTER HOLDER



The design sheet for this is given with this week's issue. The Kit of wood (No. 2850) is obtainable from Hobbies Branches for 3/4 or (postage 9d.) from Dereham, Norfolk.

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ever remark on its being made from bobbins.

In order to commence making the stand, cut out the base from $\frac{1}{2}$ in. wood or five-ply, clean up with glasspaper, and bevel off the top edge. The size depends entirely upon the size of the tobacco tin and bobbins. The tobacco tin should be a little larger than the base of the bobbins, and the wooden base about 2ins. larger in diameter than the tin.

Tin Lid

Take the bottom part of the tobacco tin and pierce a hole in the middle, large enough for the flex to pass through, and two smaller holes on each side of this to take screws. Then, make a hole in the side of the tin for the flex to pass out and screw the tin to one of the bobbins. Smooth the edges of the flex holes so there are no sharp edges.

Next, cut the top from $\frac{1}{2}$ in. wood—the same diameter as the bobbins—and drill a hole through the middle to take the flex. Then drill out a larger piece to a depth of about $\frac{1}{2}$ in. for the lamp-holder to sink into. Screw this piece on to another bobbin, and then glue the three bobbins firmly together, making sure the holes are opposite each other. A good plan is to insert a piece of dowelling or a thick knitting needle to ensure they are correctly in place.

Base Fitting

Now take the lid of the tin, pierce two holes for screws and screw this on to the base, making sure it is correctly centred. Pass the flex through the holes in the tin and the bobbins, and wire up to the lamp-holder. Draw the flex tight and push the lamp-holder into its socket in the top of the stand. Now fix on the base by simply putting the tin together, and the stand is complete.

Two coats of enamel—cream is very attractive—will transform this from a mixture of bobbins, tobacco tin and wood, into an attractive lamp-stand, and few people will notice the fact that it has been made up from these everyday articles. A circular piece of baize or felt glued to the bottom will prevent any scratches to furniture, upon which it may be placed.

When buying the lamp-holder, a good plan is to choose one with a switch combined. Alternatively, a small switch can be wired into the flex near to the base of the lamp.

Fittings

Suitable lamp shade fittings can be bought quite cheaply in most large stores, or can be fashioned from strong

wire. The top and bottom rings are made first, the top one being about 4 to 5ins. in diameter and the bottom 12 to 14ins. The two pieces of wire will need to be approximately 18ins. and 40ins. long, to allow enough wire for joining. A pair of pliers will be the only tool necessary for this.

Support Frame

The next step is to make the supporting wires. Cut two pieces about 24ins. long, put the two pieces together, and

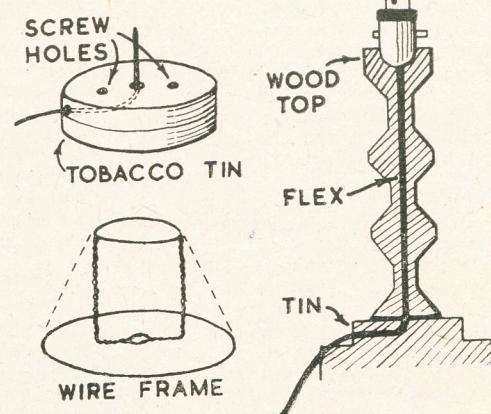
REQUIREMENTS

- 3 large bobbins—your local shoemaker or sewing-machine shop may be able to help you out here.
- 1 flat round tobacco tin, with tight-fitting lid.
- 2 circular pieces of wood.
- 1 lamp-holder fitting.
- 1 x plug.
- A length of flex.

start with the centre-ring first—that is, the part which fits over the lamp-holder. Then twist them together and bend into shape, fastening them finally to the top ring. Make sure all the joints are tight by nipping them with the pliers. The bottom ring is loose, and fastened directly on to the shade.

Lamp Shades

If the shade is not bought, attractive ones can be made from oiled paper, imitation vellum, or plastic material which is on the market now. It is merely a question of deciding what depth and shape to cut for, and then gluing up or stitching. Holes should be punched for sewing on the bottom wire



ring, with narrow ribbon, thonging or some such substitute which will adequately serve the same purpose.

The only thing left to do is to fit a lamp into position and switch on. If one has been painstaking enough, the effect will delight the heart of any home-loving person.

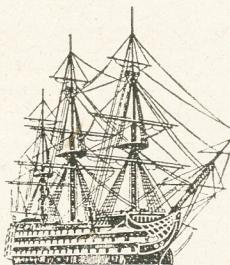
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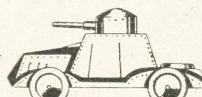
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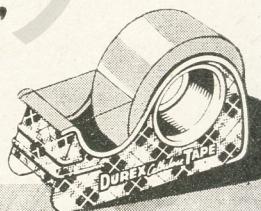


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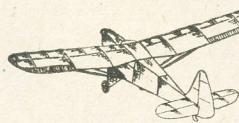
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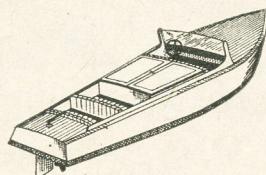
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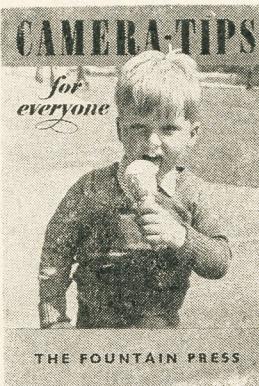
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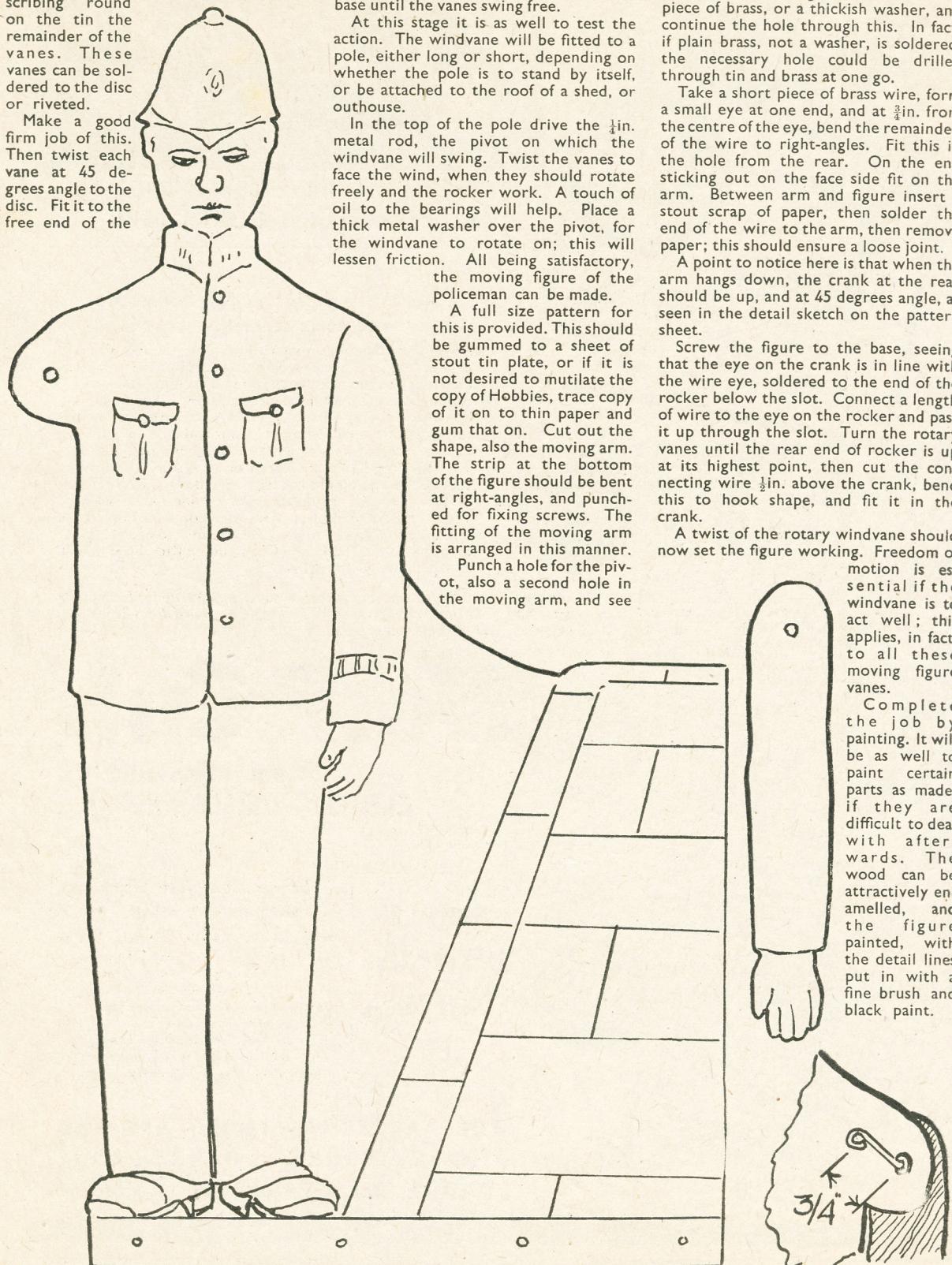
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Windvane—(Continued from page 165)
stout tin plate or sheet metal. Cut out, then soak off the paper pattern. The vane can be used as a template for scribing round on the tin the remainder of the vanes. These vanes can be soldered to the disc or riveted.

Make a good firm job of this. Then twist each vane at 45 degrees angle to the disc. Fit it to the free end of the



axle rod, and see that as it rotates (give it a trial twist with the fingers) it does not catch the end of the wood base. If it does, bevel off the corners of the base until the vanes swing free.

At this stage it is as well to test the action. The windvane will be fitted to a pole, either long or short, depending on whether the pole is to stand by itself, or be attached to the roof of a shed, or outhouse.

In the top of the pole drive the $\frac{1}{4}$ in. metal rod, the pivot on which the windvane will swing. Twist the vanes to face the wind, when they should rotate freely and the rocker work. A touch of oil to the bearings will help. Place a thick metal washer over the pivot, for the windvane to rotate on; this will lessen friction. All being satisfactory,

the moving figure of the policeman can be made.

A full size pattern for this is provided. This should be gummed to a sheet of stout tin plate, or if it is not desired to mutilate the copy of Hobbies, trace copy of it on to thin paper and gum that on. Cut out the shape, also the moving arm. The strip at the bottom of the figure should be bent at right-angles, and punched for fixing screws. The fitting of the moving arm is arranged in this manner.

Punch a hole for the pivot, also a second hole in the moving arm, and see

these holes just suit the thickness of wire used for the pivot. File the burrs, made by punching, level. At the back of the hole in the figure solder a stout piece of brass, or a thick washer, and continue the hole through this. In fact, if plain brass, not a washer, is soldered, the necessary hole could be drilled through tin and brass at one go.

Take a short piece of brass wire, form a small eye at one end, and at $\frac{3}{4}$ in. from the centre of the eye, bend the remainder of the wire to right-angles. Fit this in the hole from the rear. On the end sticking out on the face side fit on the arm. Between arm and figure insert a stout scrap of paper, then solder the end of the wire to the arm, then remove paper; this should ensure a loose joint.

A point to notice here is that when the arm hangs down, the crank at the rear should be up, and at 45 degrees angle, as seen in the detail sketch on the pattern sheet.

Screw the figure to the base, seeing that the eye on the crank is in line with the wire eye, soldered to the end of the rocker below the slot. Connect a length of wire to the eye on the rocker and pass it up through the slot. Turn the rotary vanes until the rear end of rocker is up at its highest point, then cut the connecting wire $\frac{1}{2}$ in. above the crank, bend this to hook shape, and fit it in the crank.

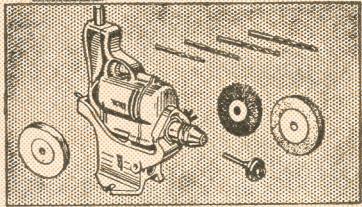
A twist of the rotary windvane should now set the figure working. Freedom of motion is essential if the windvane is to act well; this applies, in fact, to all these moving figure vanes.

Complete the job by painting. It will be as well to paint certain parts as made, if they are difficult to deal with afterwards. The wood can be attractively enamelled, and the figure painted, with the detail lines put in with a fine brush and black paint.

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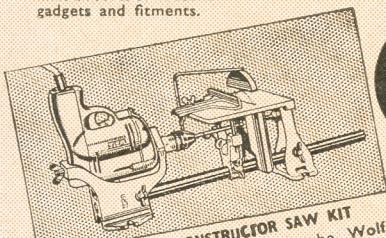
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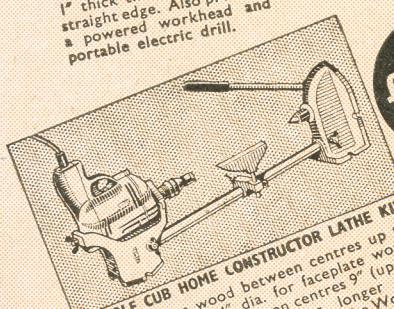
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